

Graduate: Tyler Commercial College
1946, Tyler, Texas
Broadcast Electronics

Section V-B - FM BROADCAST ENGINEERING DATA

FOR COMMISSION USE ONLY

File No. _____
 ASB Referral Date _____
 Referred by _____

Name of Applicant

CHARLES A. FARMER

Call letters (if issued)

--

Is this application being filed in response to a window? ☒ Yes ☐ No

If Yes, specify closing date: MAY 21, 1992

Purpose of Application: (check appropriate box(es))

☒ Construct a new (main) facility

☐ Construct a new auxiliary facility

☐ Modify existing construction permit for main facility

☐ Modify existing construction permit for auxiliary facility

☐ Modify licensed main facility

☐ Modify licensed auxiliary facility

If purpose is to modify, indicate below the nature of change(s) and specify the file number(s) of the authorizations affected.

☐ Antenna supporting-structure height

☐ Effective radiated power

☐ Antenna height above average terrain

☐ Frequency

☐ Antenna location

☐ Class

☐ Main Studio location

☐ Other (Summarize briefly)

File Number(s) --

1. Allocation:

Channel No.	Principal community to be served:		
	City	County	State
280	ILWACO	PACIFIC	WA

Class (check only one box below)

☐ A ☐ B1 ☐ B ☒ C3
☐ C2 ☐ C1 ☐ C

2. Exact location of antenna.

(a) Specify address, city, county and state. If no address, specify distance and bearing relative to the nearest town or landmark.

4.7 KM FROM ILWACO, WA ON A BEARING OF N023E DEGREES.

(b) Geographical coordinates (to nearest second). If mounted on element of an AM array, specify coordinates of center of array. Otherwise, specify tower location. Specify South Latitude or East Longitude where applicable; otherwise, North Latitude or West Longitude will be presumed.

Latitude	46	°	20	'	55	"	Longitude	124	°	01	'	12	"
----------	----	---	----	---	----	---	-----------	-----	---	----	---	----	---

3. Is the supporting structure the same as that of another station(s) or proposed in another pending application(s)? ☐ Yes ☒ No

If Yes, give call letter(s) or file number(s) or both. --

If proposal involves a change in height of an existing structure, specify existing height above ground level including antenna, all other appurtenances, and lighting, if any. --

SECTION V-B - FM BROADCAST ENGINEERING DATA (Page 2)

4. Does the application propose to correct previous site coordinates?
If Yes, list old coordinates.

☐ Yes ☒ No

Latitude -- ° -- ' -- "	Longitude -- ° -- ' -- "
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5. Has the FAA been notified of the proposed construction?

☒ Yes ☐ No

If Yes, give date and office where notice was filed and attach as an Exhibit a copy of FAA determination, if available.

Date MAY 11, 1992 Office where filed N.W. MOUNTAIN REGION, ANM-530
RENTON, WASHINGTON

Exhibit No.

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6. List all landing areas within 8 km of antenna site. Specify distance and bearing from structure to nearest point of the nearest runway.

Landing Area	Distance (km)	Bearing (degrees True)
(a) <u>PORT OF ILWACO, WA</u>	<u>3.7</u>	<u>N163E</u>
(b) <u>--</u>	<u>--</u>	<u>--</u>

7. (a) Elevation: (to the nearest meter)

(1) of site above mean sea level; 64.0 meters

(2) of the top of supporting structure above ground (including antenna, all other appurtenances, and lighting, if any); and 82.3 meters

(3) of the top of supporting structure above mean sea level [(aX1) + (aX2)] 146.3 meters

- (b) Height of radiation center: (to the nearest meter) H - Horizontal; V - Vertical

(1) above ground 75.0 meters (H)

75.0 meters (V)

(2) above mean sea level [(aX1) + (bX1)] 139.0 meters (H)

139.0 meters (V)

(3) above average terrain 100.0 meters (H)

100.0 meters (V)

8. Attach as an Exhibit sketch(es) of the supporting structure, labelling all elevations required in Question 7 above, except item 7(b)(3). If mounted on an AM directional-array element, specify heights and orientations of all array towers, as well as location of FM radiator.

Exhibit No.
E-1

9. Effective Radiated Power:

- (a) ERP in the horizontal plane

25.00 kw (H*) 25.00 kw (V*)

- (b) Is beam tilt proposed?

☐ Yes ☒ No

If Yes, specify maximum ERP in the plane of the tilted beam, and attach as an Exhibit a vertical elevational plot of radiated field.

Exhibit No.

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-- kw (H*) -- kw (V*)

*Polarization

SECTION V-B - FM BROADCAST ENGINEERING DATA (Page 3)

10. Is a directional antenna proposed?

☐ Yes ☒ No

If Yes, attach as an Exhibit a statement with all data specified in 47 C.F.R. Section 73.316, including plot(s) and tabulations of the relative field.

Exhibit No.
--

11. Will the proposed facility satisfy the requirements of 47 C.F.R. Sections 73.315(a) and (b)?

☒ Yes ☐ No

If No, attach as an Exhibit a request for waiver and justification therefor, including amounts and percentages of population and area that will not receive 3.16 mV/m service.

Exhibit No.
--

12. Will the main studio be within the protected 3.16 mV/m field strength contour of this proposal?

☒ Yes ☐ No

If No, attach as an Exhibit justification pursuant to 47 C.F.R. Section 73.1125.

Exhibit No.
--

13. (a) Does the proposed facility satisfy the requirements of 47 C.F.R. Section 73.207?

☒ Yes ☐ No

(b) If the answer to (a) is No, does 47 C.F.R. Section 73.213 apply?

☐ Yes ☐ No

(c) If the answer to (b) is Yes, attach as an Exhibit a justification, including a summary of previous waivers.

Exhibit No.
--

(d) If the answer to (a) is No and the answer to (b) is No, attach as an Exhibit a statement describing the short spacing(s) and how it or they arose.

Exhibit No.
--

(e) If authorization pursuant to 47 C.F.R. Section 73.215 is requested, attach as an Exhibit a complete engineering study to establish the lack of prohibited overlap of contours involving affected stations. The engineering study must include the following: DNA

Exhibit No.
--

- (1) Protected and interfering contours, in all directions (360°), for the proposed operation.
- (2) Protected and interfering contours, over pertinent arcs, of all short-spaced assignments, applications and allotments, including a plot showing each transmitter location, with identifying call letters or file numbers, and indication of whether facility is operating or proposed. For vacant allotments, use the reference coordinates as the transmitter location.
- (3) When necessary to show more detail, an additional allocation study utilizing a map with a larger scale to clearly show prohibited overlap will not occur.
- (4) A scale of kilometers and properly labeled longitude and latitude lines, shown across the entire exhibit(s). Sufficient lines should be shown so that the location of the sites may be verified.
- (5) The official title(s) of the map(s) used in the exhibit(s).

14. Are there: (a) within 60 meters of the proposed antenna, any proposed or authorized FM or TV transmitters, or any nonbroadcast (except citizens band or amateur) radio stations; or (b) within the blanketing contour, any established commercial or government receiving stations, cable head-end facilities, or populated areas; or (c) within ten (10) kilometers of the proposed antenna, any proposed or authorized FM or TV transmitters which may produce receiver-induced intermodulation interference?

☒ Yes ☐ No

If Yes, attach as an Exhibit a description of any expected, undesired effects of operations and remedial steps to be pursued if necessary, and a statement accepting full responsibility for the elimination of any objectionable interference (including that caused by receiver-induced or other types of modulation) to facilities in existence or authorized or to radio receivers in use prior to grant of this application. (See 47 C.F.R. Sections 73.315(b), 73.316(e) and 73.318.)

Exhibit No.
E-2

15. Attach as an Exhibit a 75 minute series U.S. Geological Survey topographic quadrangle map that shows clearly, legibly, and accurately, the location of the proposed transmitting antenna. This map must comply with the requirements set forth in Instruction V. The map must further clearly and legibly display the original printed contour lines and data as well as latitude and longitude markings, and must bear a scale of distance in kilometers.

Exhibit No.
E-3

16. Attach as an Exhibit *(name the source)* a map which shows clearly, legibly, and accurately, and with the original printed latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.
E-4

(a) the proposed transmitter location, and the radials along which profile graphs have been prepared;

(b) the 3.16 mV/m and 1 mV/m predicted contours; and

(c) the legal boundaries of the principal community to be served.

17. Specify area in square kilometers (1 sq. mi. = 259 sq. km.) and population (latest census) within the predicted 1 mV/m contour.

Area 2126 sq. km. Population 39 250

18. For an application involving an auxiliary facility only, attach as an Exhibit a map *(Sectional Aeronautical Chart or equivalent)* that shows clearly, legibly, and accurately, and with latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.
- -

(a) the proposed auxiliary 1 mV/m contour; and

(b) the 1 mV/m contour of the licensed main facility for which the applied-for facility will be auxiliary. Also specify the file number of the license.

19. Terrain and coverage data *(to be calculated in accordance with 47 C.F.R. Section 73.313)*

Source of terrain data: *(check only one box below)*

☒ Linearly interpolated 30-second database ☐ 75 minute topographic map

(Source: NGDC)

☐ Other *(briefly summarize)*

SECTION V-B - FM BROADCAST ENGINEERING DATA (Page 5)

Radial bearing (degrees True)	Height of radiation center above average elevation of radial from 8 to 16 km (meters)	Predicted Distances	
		To the 3.16 mV/m contour (kilometers)	To the 1 mV/m contour (kilometers)
* 203	130.5	26.1	43.4
0	139.0	26.8	44.5
45	90.1	22.1	37.4
90	- 13.7 [30]	12.7	22.8
135	71.1	19.6	33.5
180	138.0	26.7	44.4
225	* 136.6	26.6	44.2
270	3 - 16 KM AND BEYOND	OVER PACIFIC OCEAN	
315	** 138.7	26.8	44.5

*Radial through principal community, if not one of the major radials. This radial should NOT be included in the calculation of HAAT.

* 3.0 TO 5.2 KM, PACIFIC OCEAN THEREAFTER.

** 3.0 TO 4.3 KM, " " "

20. Environmental Statement (See 47 C.F.R. Section 1.1301 et seq.)

Would a Commission grant of this application come within Section 1.1307 of the FCC Rules, such that it may have a significant environmental impact? ☐ Yes ☒ No

If you answer Yes, submit as an Exhibit an Environmental Assessment required by Section 1.1311.


Exhibit No.

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If No, explain briefly why not. SEE EXHIBIT E-5

CERTIFICATION

I certify that I have prepared this Section of this application on behalf of the applicant, and that after such preparation, I have examined the foregoing and found it to be accurate and true to the best of my knowledge and belief.

Name (Typed or Printed) ROBERT A. MCCLANATHAN, P.E. MCCLANATHAN AND ASSOCIATES, INC.	Relationship to Applicant (e.g., Consulting Engineer) PROFESSIONAL ELECTRICAL ENGINEER
Signature 	Address (Include ZIP Code) P.O. Box 939 PORTLAND, OR 97207
Date MAY 11, 1992	Telephone No. (Include Area Code) (503) 246-8080

1
McCLANATHAN and ASSOCIATES, INC.
PROFESSIONAL ELECTRICAL ENGINEERS
P.O. BOX 939 - PORTLAND, OREGON 97207-0939
TEL: (503) 246-8080 FAX: (503) 246-6304

EXHIBIT E

ENGINEERING STATEMENT

concerning

**APPLICATION BY CHARLES A. FARMER
FOR A CONSTRUCTION PERMIT TO BUILD A NEW FM
BROADCAST STATION IN ILWACO, WASHINGTON
ON CHANNEL 280C3, 103.9 MHz.**

This statement and attached exhibits have been prepared for Charles A. Farmer relative to application for a construction permit to build a new FM broadcast station in Ilwaco, Washington to operate on FM channel 280C3, 103.9 MHz. This FM channel was allocated to Ilwaco, Washington by the FCC, effective April 20, 1992, MM Docket No. 91-130.

It is proposed to locate the transmitter and antenna on a rural hill 4.7 kilometers NNE of Ilwaco, Washington. This transmitting facility will be remotely controlled from a studio location in Ilwaco. A 10.0 kW FM transmitter will be installed to feed a five section circularly polarized FM antenna to be side mounted at the top of a 80.8 meter high steel tower as shown in the sketch, Exhibit E-1. This FM antenna will have a power gain of 2.70.

The proposed FM antenna will have a height above average terrain of 99.97 meters. The effective radiated power will be 25.00 kW to comply with Section 73.211 of the Rules for a Class C3 station. A FM channel allocation study demonstrated that the proposed site complies with Section 73.207 of the Rules.

The proposed antenna site is not located in the vicinity of other communications facilities and is not in a populated area. Exhibit E-2 is a statement from the Applicant accepting full responsibility for the elimination of any objectionable effect on existing communications services that may result from the proposed operation.

Exhibit E-3, composed of United States Geological Survey 7.5 minute topographic maps, shows the character of the area surrounding the proposed transmitter site. Exhibit E-3A, a full scale portion of the Cape Disappointment 7.5 minute Geological Survey map, shows the proposed transmitter location.

Exhibit E-3B is the reduced photographic copy of the entire Cape Disappointment 7.5 minute topographic map. The incorporated community of Ilwaco is located on the N203E degree radial and 4.7 km from the proposed transmitter site. The N180E degree radial from the proposed site also bisects the community of Ilwaco.

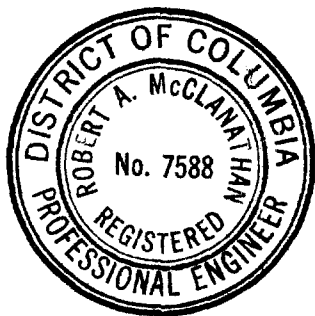
The heights of the antenna radiation center above average terrain elevation for the 0, 45, 90, 135, 180, 225 and 315 degree radials from 3 to 16 kilometers were determined from the linearly interpolated 30 second point data base supplied by the National Geophysical Data Center. The 270 degree radial is entirely over the Pacific Ocean beyond 3 kilometers.

The distances along these radials to the predicted 3.16 mV/m, 70 dBu and 1.0 mV/m, 60 dBu contours were determined from reference to the propagation data published by the FCC in Section 73.333. Exhibit E-4 shows the predicted 3.16 mV/m, 70 dBu and 1 mV/m, 60 dBu contours plotted on a USGS map with an original scale of 1:500 000 which also shows the county boundaries. The community of Ilwaco is within the predicted 70 dBu contour and is line-of-sight from the proposed FM antenna location in accordance with FCC policy.

Census facts for the population of the area enclosed within the 60 dBu contour was obtained from the Dataworld, Inc. computer service using the 1990 U.S. Census from the U.S. Bureau of the Census. The area within the 60 dBu contour, plotted in Exhibit E-4, was measured with a polar planimeter.

The proposed location of the transmitter and antenna is located in a sparsely populated area. Exhibit E-5 is an environmental statement concerning human exposure to radio frequency radiation. Since the Applicant proposes to construct a new tower structure, FAA Form 7460-1 has been completed and tendered to that agency in Renton, Washington.

Respectfully submitted,



Robert A. McClanathan, P.E.
McClanathan and Associates, Inc.
Professional Electrical Engineers

May 11, 1992

STATE OF OREGON)
) SS:
County of Multnomah)

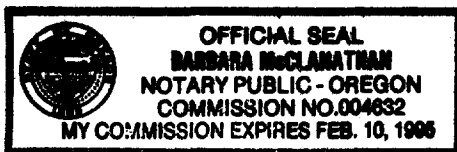
ROBERT A. McCLANATHAN, being duly sworn upon oath,
deposes and says:

1. That he is President of McClanathan and Associates, Inc., Professional Electrical Engineers.
2. That he is a licensed Professional Electrical Engineer in the States of California, Oregon, Washington and the District of Columbia and that he is a member of the Association of Federal Communications Consulting Engineers.
3. That he has been engaged in radio and television broadcast engineering and developments since 1955.
4. That he has been retained by Charles A. Farmer to prepare the engineering exhibits relative to application to the FCC for a construction permit to construct a new FM broadcast station in Ilwaco, Washington, on Channel 280C3.

Affiant finally states that the material and exhibits contained in this report were prepared by him or under his direct supervision and that he has checked all results and believes them to be true.

R. A. McClanathan
Robert A. McClanathan, P.E.

Subscribed and sworn to before me this 11th day of May, 1992



Barbara McClanathan
Notary Public, Oregon

In and for the County of Multnomah, State of Oregon.

PROPRIETARY DECLARATION

NO PART OF THE CALCULATIONS, DRAWINGS, MAP REPRODUCTIONS OR EXHIBITS CONTAINED IN THIS REPORT MAY BE INCLUDED WITHIN OR REFERENCED TO ANY APPLICATION TENDERED TO THE FEDERAL COMMUNICATIONS COMMISSION WITHOUT WRITTEN PERMISSION OF McCLANATHAN AND ASSOCIATES, INC. THIS REPORT MAY BE REPRODUCED BY THE FEDERAL COMMUNICATIONS COMMISSION AND ITS AUTHORIZED PRINTING CONTRACTOR FOR REFERENCE PURPOSES ONLY AND ANY OTHER USE OR REPRODUCTION IS STRICTLY PROHIBITED.

INDEX OF EXHIBITS

EXHIBIT

TITLE

E-1	Vertical Sketch of Proposed Tower and FM Antenna
E-2	Statement Concerning Radio Frequency Interference
E-3A	Transmitter Location Plotted on 7.5' USGS Map
E-3B	Reduced copy of Cape Disappointment 7.5' USGS Map
E-4	Map of Predicted 3.16 mV/m, 70 dBu and 1 mV/m, 60 dBu Contours
E-5	Environmental Statement Concerning Human Exposure to Radio Frequency Radiation

EXHIBIT E-1

VERTICAL SKETCH OF PROPOSED GUYED TOWER
AND FIVE SECTION FM ANTENNA

CH. 280C3, ILWACO, WA

CHARLES A. FARMER

146.3 M (480 FT) MSL

FIBERGLASS GUY RODS
INSTALLED NEAR ALL
RADIATING ELEMENTS

139.0 M (456 FT) MSL

82.3 M (270 FT)

75.0 M (246 FT)

64.0 M (210 FT)

NORTH LAT. $46^{\circ} 20' 55''$

WEST LONG. $124^{\circ} 01' 12''$

MEAN SEA LEVEL

McCLANATHAN & ASSOCIATES

CONSULTING ELECTRONIC ENGINEERS

P. O. BOX 939

PORTLAND, OREGON 97207

5-11-92

EXHIBIT E-2

STATEMENT CONCERNING RADIO FREQUENCY INTERFERENCE

The proposed five section FM antenna will be side mounted on a new guyed steel tower with an overall height above ground of 82.3 meters. The proposed site is not located in the vicinity of any known communications facilities. The nearest broadcast transmitter is FM Radio Station KKEE located 4.55 kilometers away from the site.

The proposed operation by the Applicant is on 103.9 MHz with an ERP of 25.0 kW employing circular polarization. The height of the antenna supporting structure was selected so that the center of radiation of the proposed five section FM antenna will be above any future lower power communications antennas that could be located in the vicinity.

It is believed that there will be no adverse effect on existing communications facilities located in the area. In the unpredictable event that intermodulation or other interference should occur as a result of the proposed operation, the Applicant, by signing the certification on Page 2 of Section VII, FCC Form 301, accepts responsibility to immediately take action to correct such adverse conditions by means of standard types of cavity filters and traps.

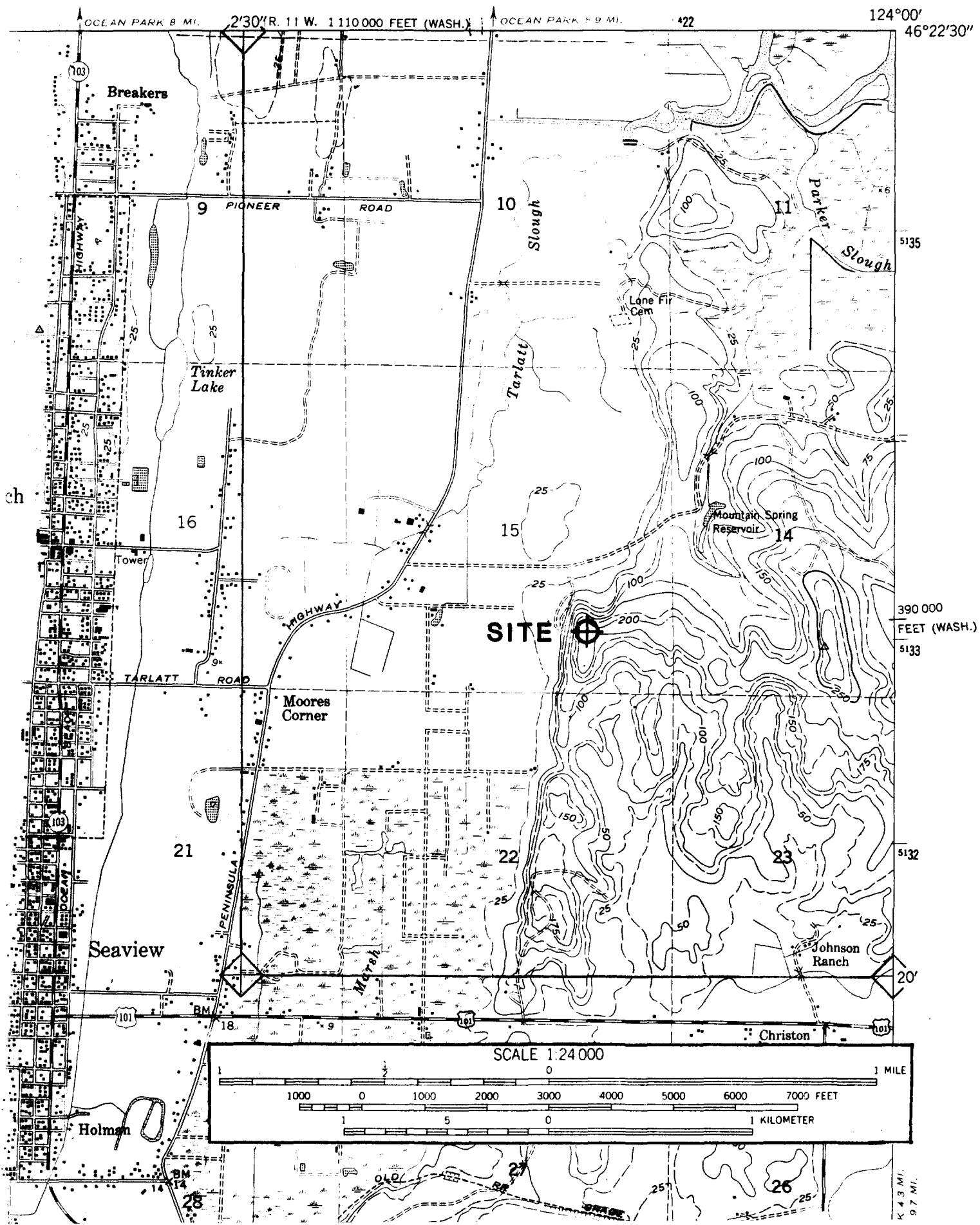
EXHIBIT E-3A

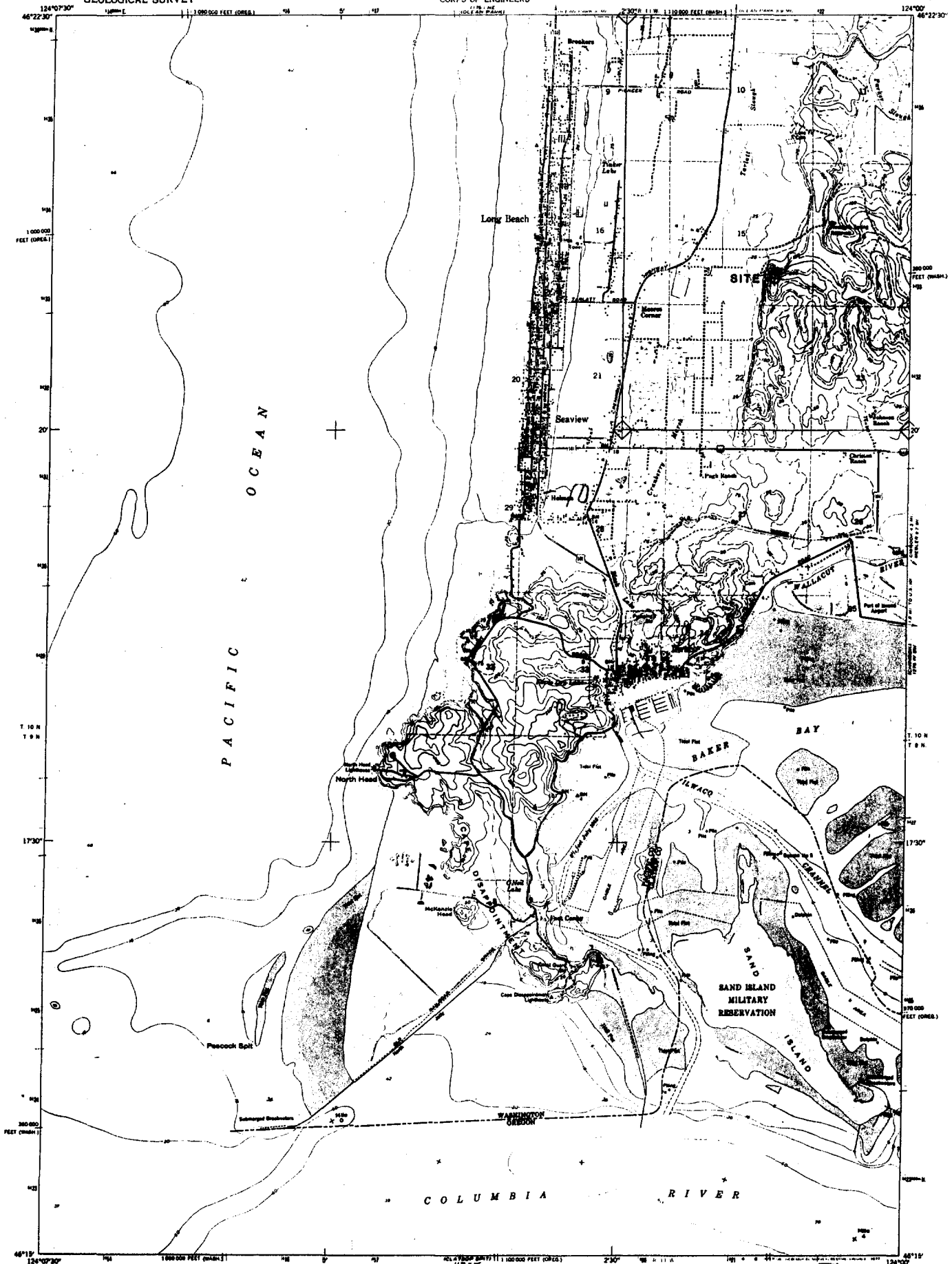
CAPE DISAPPOINTMENT QUADRANGLE

WASHINGTON—OREGON

7.5 MINUTE SERIES (TOPOGRAPHIC)

1276 IV NW
(LONG ISLAND)





Maped by the Army Map Service
Published for civil use by the Geological Survey
Control by USCGS and USCE

Topography from aerial photographs by multiple methods
Aerial photographs taken 1943. Field check 1949
Control photography compiled from USCGS Charts 6185,
1952; 6002, 1942 (corrected to 1951) and 6151, 1949
(corrected to 1953)

Polyconic projection. 1927 North American datum
10,000-foot grid based on Washington coordinate system,
south zone and Oregon coordinate system, north zone
Dashed land lines indicate approximate location
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue



CONTOUR INTERVAL, 50 FEET
DASHED LINES REPRESENT HALF-INTERVAL CONTOURS
NATIONAL GEODESIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET - DATUM IS MEAN LOWER LOW WATER
SHORELINE SOUNDINGS SHOW THE APPROPRIATE LINE OF MEAN HIGH WATER
THE POSITIVE SOUND OF FATHOMS IS INDICATED BY 'F' IN FEET
THIS MAP COMPLEYS WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225 OR REGION, VIRGINIA 22062
A POLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST
Revisions shown at outside controlled for the Contour at Green from



ROAD CLASSIFICATION
Heavy duty ——— Light duty ———
Medium duty ——— Unimproved dirt ———
U. S. Route ——— State Route ———

CAPE DISAPPOINTMENT, WASH.—OREG.

N4615-W12400/7.5

PHOTOGRAPHED 1973
AND 1971 BY USGS

EXHIBIT E-4
PREDICTED CONTOURS
CH 280C3 25 KW ERP 100 M HAAT
ILWACO, WASHINGTON

3.16 MV/M, 70 DBU
1.0 MV/M, 60 DBU

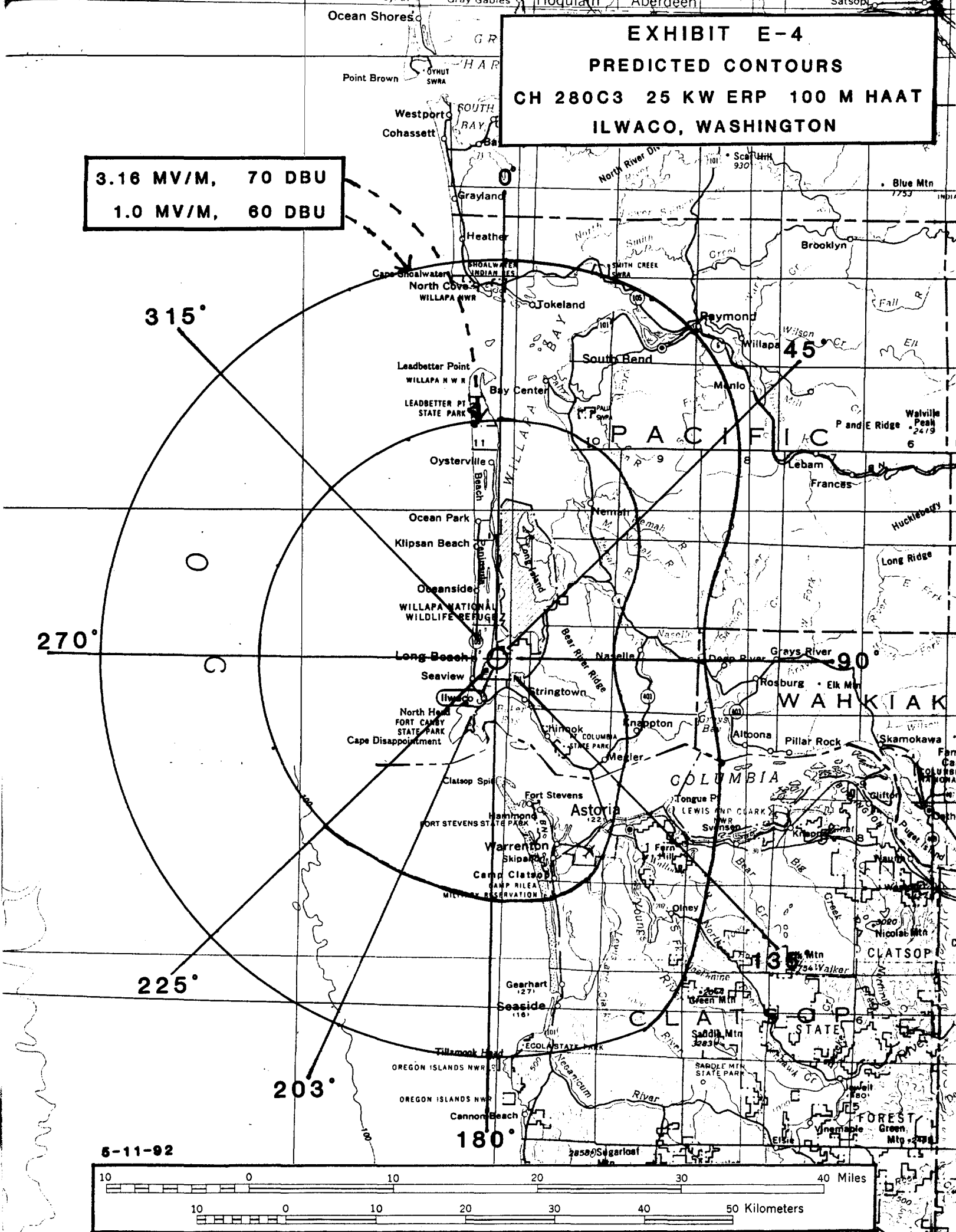


EXHIBIT E-5

ENVIRONMENTAL STATEMENT

An Environmental Assessment (EA) is categorically excluded under 47 C.F.R. Section 1.1306(b) of the FCC Rules and Regulations since the Applicant's proposal does not:

1. Involve a site location specified under 47 C.F.R. Section 1.1307(a)(1) through (7).

2. Involve high intensity lighting under 47 C.F.R. Section 1.1307(a)(8).

3. Result in human exposure to radiofrequency radiation in excess of the applicable safety standards specified in 47 C.F.R. Section 1.1307(b), (ANSI C95.1-1982 and ANSI C95.1-1991).

The Maximum Permissible Exposure (MPE) for uncontrolled environments at 103.9 MHz is 0.2 mW/cm^2 . The distance D from the proposed FM antenna radiating a total of 50.0 kW (25.0 H and 25.0 V) ERP to the MPE point may be determined by the equation on page 9 of the FCC OST Bulletin No. 65 dated October 1985. The relative field strength at depression angles towards the ground for a five section antenna, as shown on the attached vertical field strength profile graph, will be less than 0.26. The MPE distance from this antenna for uncontrolled exposure is:

$$D^2 = \frac{(2.56)(1.64)(0.26)^2(50,000 \text{ watts})(1000 \text{ mW/W})}{4(3.1416)(0.2 \text{ mW/cm}^2)}$$

$$D = 2376 \text{ cm} = 23.8 \text{ meters}$$

The center of radiation for the five section FM antenna is 75.0 meters above ground level. Therefore, the proposed installation does comply with FCC specified guidelines for uncontrolled human exposure to radio frequency radiation. The tower structure will be fenced to prevent unauthorized access.

The Applicant will instruct all personnel to terminate RF radiations from this antenna when service work requires that persons approach the proposed antenna at distances equal to or less than the MPE distance for controlled exposure. Assuming a "worst-case" condition, with a relative field strength of 1.0, this distance will be 4087 cm or 40.9 meters from the antenna.

There are no known other radio frequency radiators within one kilometer of the proposed site.

